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JP-A 55082458; JP-A 53154950; JP-A 78154950

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PATENT ABSTRACTS OF JAPAN

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June 21, 1980

PREPARATION OF SEMICONDUCTOR DEVICE

INVENTOR: IIZUKA HISAKAZU

APPL-NO: 53154950 (JP 78154950)

FILED: December 18, 1978

ASSIGNEE: TOSHIBA CORP

INT-CL: H01L27/04, (Section H, Class 01, Sub-class L, Group 27, Sub-group 04);
H01L21/265, (Section H, Class 01, Sub-class L, Group 21, Sub-group 265)

ABST:

PURPOSE: To form a high resistance element that its accuracy is high and its integration degree is high, by injecting not less than one kind between oxygen or nitrogen into a resistance element region in a polycrystal silicon layer on a substrate in ionic shapes.

CONSTITUTION: A silicon oxide film 22 with 1 [μ] thickness is made up on a p-type Si substrate 21, and a phosphor added polysilicon layer 23 is attached by means of a method, such as a CVD method in a phosphor atmosphere and patterned. The electrode portions at the both ends are coated with oxide silicon films 24, and not less than one kind between O or N ions are injected into the phosphor added polysilicon layer 23 in the quantity of dose of 10^{12} [Similar] $10^{18}/\text{cm}^2$ as using the oxide silicon film 24 as a mask. The whole may be heated. A high resistance element with $1\text{k } [\Omega]$ [Similar] $10^5 \text{M } [\Omega]$ that $\text{SiO}_x(x \leq 2)$ or $\text{Si}_3\text{N}_x(x \leq 4)$ or both are formed is built up in the region to which ions are injected. The resistance element made up in this way has the excellent accuracy of dimensions, and the desired resistance value can precisely be obtained by the control of the quantity of dose.

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